

What is claimed is:

- 1) A method of protecting at least one fire sprinkler riser system of a fire-protectable structure comprising the steps of:
  - a) providing at least one protective enclosure around the at least one fire sprinkler riser system;
  - b) attaching such at least one protective enclosure to such fire-protectable structure; and
  - c) operatively connecting such at least one fire sprinkler riser system to a fire sprinkler system of such fire-protectable structure.
- 2) The method according to Claim 1 further comprising:
  - a) providing at least one closable access portal to such at least one protective enclosure structured and arranged to permit maintenance of such at least one fire sprinkler riser system.
- 3) The method according to Claim 1 wherein such at least one protective enclosure comprises:
  - a) at least one box sufficiently large to enclose such at least one fire sprinkler riser system.

- 4) A method of supplying fire sprinkler riser systems for a fire-protectable structure comprising the steps of:
  - a) providing at least one fire sprinkler riser;
  - b) providing at least one protective enclosure to protect such at least one fire sprinkler riser after installation;
  - c) mounting, before the installation, such at least one fire sprinkler riser in such at least one protective enclosure; and
  - d) providing transportation of such mounted at least one fire sprinkler riser to at least one installer.
- 5) The method according to Claim 4 further comprising the step of attaching at least one fire sprinkler riser component to such at least one fire sprinkler riser prior to such mounting.
- 6) The method according to Claim 4 further comprising the step of attaching at least one fire sprinkler riser component to such at least one fire sprinkler riser after such mounting.
- 7) The method according to Claim 4 wherein such at least one protective enclosure comprises at least one closable access portal.
- 8) The method according to Claim 4 wherein such at least one protective enclosure further comprises storage means for storing replacement sprinkler heads.

- 9) The method according to Claim 4 wherein such at least one protective enclosure further comprises indicia means for instructing at least one user concerning the at least one fire sprinkler riser system.
- 10) A fire protection system for connecting at least one water supply to at least one fire sprinkler system of a fire-protectable structure comprising, in combination:
- a) at least one riser system comprising at least one riser; and,
  - b) at least one enclosure structured and arranged to substantially enclose and protect such at least one riser system;
  - c) wherein such at least one riser system is mounted to such at least one enclosure.
- 11) The fire protection system according to Claim 10 wherein said at least one enclosure further comprises at least one closable access portal structured and arranged to permit maintenance of said at least one riser system.
- 12) The fire protection system according to Claim 10 wherein said at least one enclosure comprises at least one box sufficiently large to enclose and protect said at least one riser system.

- 13) The fire protection system according to Claim 12 wherein said at least one protective enclosure further comprises at least one storage element adapted to store replacement sprinkler heads.
- 14) The fire protection system according to Claim 12 wherein said at least one enclosure further comprises at least one indicia adapted to instruct at least one user concerning the at least one riser system.
- 15) The fire protection system according to Claim 10 wherein said at least one enclosure comprises at least one attachment adapted to assist attachment of said enclosure to such fire-protectable structure.

- 16) The fire protection system according to Claim 10 further comprising at least one component, attached to said riser, wherein said at least one component provides at least one function selected from the group consisting of:
- a) a flow switch function to monitor water flow through the at least one fire sprinkler system;
  - b) a test and drain valve function to test and drain the at least one fire sprinkler system;
  - c) a pressure gauge function to monitor water pressure in the at least one fire sprinkler system; and,
  - d) a relief valve function to provide over-pressure relief for the at least one fire sprinkler system.
- 17) The fire protection system according to Claim 10 wherein said at least one riser comprises a unitary structure.
- 18) The fire protection system according to Claim 10 wherein said at least one enclosure is structured and arranged to fit substantially within wall framing supports of a wall within the fire-protectable structure.

- 19) The fire protection system according to Claim 10 wherein said at least one enclosure comprises at least one box having at least one first opening for at least one ingress water supply and at least one second opening for at least one water egress to at least one sprinkler of the at least one fire sprinkler system.
- 20) The fire protection system according to Claim 10 wherein said at least one riser consists essentially of a plastic material.
- 21) The fire protection system according to Claim 10 wherein said at least one enclosure consists essentially of at least one material selected from the following group:
- a) plastic
  - b) metal
  - c) composite material
  - d) at least two of the above materials.
- 22) The fire protection system according to Claim 10 wherein said enclosure comprises at least one mud-ring.

- 23) The fire protection system according to Claim 14 wherein elements of said indicia means comprise information selected from the group consisting essentially of:
- a) instructions
  - b) test data
  - c) troubleshooting information
  - d) hydraulic calculations
- 24) The fire protection system according to Claim 11 wherein said at least one closable access portal comprises at least one transparent window.
- 25) The fire protection system according to Claim 16 further comprising a computer system structured and arranged to provide selected monitoring of functions of the fire protection system.

- 26) An apparatus for use in a fire-protectable structure adjacent a location of at least one fire sprinkler system of a fire-protectable structure comprising, in combination:
- a) at least one portable enclosure structured and arranged to protect at least one fire sprinkler riser system when substantially interior to said at least one portable enclosure from normally damaging elements exterior to said at least one portable enclosure;
  - b) at least one first aperture in said at least one portable enclosure structured and arranged to permit entry into said at least one portable enclosure of at least one fire suppressant supply line, and
  - c) at least one second aperture in said at least one portable enclosure structured and arranged to permit entry into said at least one portable enclosure of at least one fire suppressant egress line;
  - d) wherein said at least one portable enclosure comprises at least one closable access portal structured and arranged to permit maintenance of the at least one fire sprinkler riser system; and
  - e) wherein said at least one portable enclosure is attachable to at least one portion of the at least one fire-protectable structure adjacent a location of the at least one fire sprinkler riser system.



- 27) The apparatus according to Claim 26 further comprising at least one user-option knock-out aperture.
- 28) At least one unitary riser for use in at least one fire sprinkler system of a fire-protectable structure comprising substantially plastic.
- 29) The at least one unitary riser according to Claim 28 further comprising at least one bracket structured and arranged to assist attachment of said at least unitary riser to the fire-protectable structure.
- 30) The at least one unitary riser according to Claim 29 wherein at least one said at least one bracket is aligned with at least one port of said at least one unitary riser.
- 31) The at least one unitary riser according to Claim 29 wherein at least one said at least one bracket is perpendicular to at least one port of said at least one unitary riser.
- 32) The at least one unitary riser according to Claim 29 wherein at least one said at least one bracket is integral to said at least one unitary riser.
- 33) The at least one unitary riser according to Claim 28 comprising substantially CPVC plastic.

- 34) The at least one unitary riser according to Claim 28 further comprising:
- a) at least one component wherein said at least one component provides at least one function selected from the group consisting of:
    - i) a flow switch function to monitor water flow through the at least one fire sprinkler system,
    - ii) a test and drain valve function to test and drain the at least one fire sprinkler system,
    - iii) a pressure gauge function to monitor water pressure in the at least one fire sprinkler system, and
    - iv) a relief valve function to provide over-pressure relief for the at least one fire sprinkler system; and
  - b) a plurality of ports wherein at least one of said plurality of ports is attached to said at least one component.
- 35) The at least one unitary riser according to Claim 34 wherein said at least one of said plurality of ports is structured and arranged to provide a gluable connection.
- 36) The at least one unitary riser according to Claim 28 further comprising at least one indicia element adapted to provide information to at least one user.

- 37) A riser system for use in at least one fire sprinkler system of a fire-protectable structure comprising at least one unitary riser having at least one integral bracket structured and arranged to attach said at least one unitary riser to the fire-protectable structure.
- 38) A flow switch system for monitoring water flow through at least one fire sprinkler system wherein the flow switch comprises:
- a) at least one first flow indicator structured and arranged to indicate the water flow; and
  - b) at least one second flow-volume indicator structured and arranged to indicate water flow volume.
- 39) The flow switch system according to Claim 38 wherein said at least one second flow-volume indicator is numerically readable.
- 40) The flow switch system according to Claim 38 wherein said at least one second flow-volume indicator is electronically readable.

- 41) A flow switch system for monitoring water flow through at least one riser of a fire sprinkler system of a fire-protectable structure comprising at least one flow switch comprising a readable gauge wherein said flow switch is structured and arranged so that, when said flow switch is installed adjacent a wall of the fire-protectable structure, a readable face of said readable gauge is parallel to the wall.
- 42) A flow switch system for monitoring water flow through at least one fire sprinkler system comprising a fail-safe electronic monitoring system.
- 43) A unitary riser system for use in at least one fire sprinkler system of a fire-protectable structure comprising at least one integral backflow valve.
- 44) The unitary riser system according to Claim 43 wherein said at least one integral backflow valve is structured and arranged to connect to a flow switch indicator.
- 45) A riser system for use in at least one fire sprinkler system of a fire-protectable structure comprising at least one integral backflow valve connected to a flow switch indicator.

- 46) A flow switch attachment system for attaching at least one flow switch to at least one riser of at least one fire sprinkler system of a fire-protectable structure comprising:
- a) at least one first coupler; and
  - b) at least one second coupler, attachable to the at least one flow switch, structured and arranged to removably couple to said at least one first coupler;
  - c) wherein said at least one first coupler comprises at least one first end and at least one second end;
  - d) wherein said at least one first end is structured and arranged to sealably attach to the at least one riser;
  - e) wherein said at least one second end is structured and arranged to sealably attach to said at least one second coupler;
  - f) wherein said at least one first end comprises at least one attachment selected from the following group:
    - i) screw threads,
    - ii) adhesive,
    - iii) welding; and
  - g) wherein the at least one flow switch may be sealably attached to the at least one riser utilizing said at least one coupling.

- 47) A flow switch system for monitoring water flow through at least one riser of a fire sprinkler system of a fire-protectable structure comprising:
- a) at least one flow switch;
  - b) wherein said at least one flow switch comprises at least one water pressure indicator structured and arranged to indicate water pressure in said at least one riser.
- 48) In a system for connecting a flow switch to a longitudinal pipe for monitoring water flow through said longitudinal pipe, said flow switch being of the type comprising a housing including a face plate, a sensing switch within said housing, a sensing paddle outside said housing and connected by a connector member through said face plate to said sensing switch, screw attachments for connecting said face plate to a flange member, and a cylindrical seal member, co-axial with said sensing paddle and encircling said connector member, for sealing said face-plate-to-flange connection, the steps of:
- a) providing an attachment pipe extending transversely from said longitudinal pipe along a first side of said longitudinal pipe, said attachment pipe comprising, at an outer end of said attachment pipe, a flange, comprising a cylindrical counterbore co-axial with said attachment pipe, for direct no-pipe-thread attachment

of said flow switch to said attachment pipe in such manner that said flow switch may monitor water flow through said longitudinal pipe;

- b) providing a said disassembled said flow switch with said face plate, said sensing paddle and connector member, and said seal member;
- c) inserting said sensing paddle through said counterbore into said attachment pipe in such manner that said seal member rests essentially within said counterbore;
- d) connecting said face plate to said flange with said screw attachments in such manner as to seal said face-plate-to-flange connection with said sensing paddle in place for said monitoring and permit said connector member to pass through said face plate in position for connection to said sensing switch;
- e) reconnecting said connector member to said sensing switch; and
- f) reconnecting said housing to reassemble said flow switch.